1. General Description

1.1 Introduction

The Shimadzu GC-8A is the recent gas chromatograph designed top performance in both isothermal GC and programmed temperature GC. Each chromatograph is dedicated to a single detector type, a variety which includes flame ionization (FID), thermal conductivity (TCD), flame photometric (FPD), and electron capture (ECD). The ECD is available only in a GC-8AI (isothermal) model.

The GC-8A is equipped with two on-column injection ports.

The flow control panel is customized to the requirements of the particular detector installed.

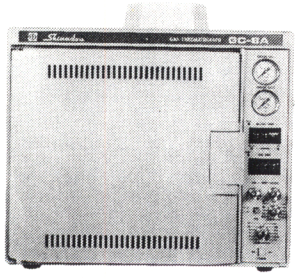
Since space is at a premium in many laboratories, and straightforward high-performance is what is most needed, the inclusion of a sizeable oven in a gas chromatograph which is small in overall size, and the structural separation of the electronic unit from the oven/detector/flow controller unit of programmable models, help to make the GC-8A a most cost-performing and desireable addition to the laboratory. The temperature programmer may serve as a base for the oven unit, and contains the electronic control for the detector. A separate electronic control unit is included in the FID isothermal model, but in all other isothermal models the electronic detector and temperature controls are built into the oven unit, eliminating the need for a separate electronic unit.

Automating accessories are available such as integrators, and computers, automatic samplers, and others.

Be assured that very great care has been taken in the interplay of electronics and mechanics to provide a gas chromatograph characterized by excellent reproducibility, operational ease, maximum sensitivity, and low cost.

1.2 Constitution of the main body

The GC-8AIT model consists of the following main units.



No.	Description	Part No.
①	Column oven	221-19069-91
②	Flow-control	221-22279-91 (TCD)
③	Detector	221-18977-92
④	Temperature control	221-21931-91
⑤	Detector control	221-18977-92 (TCD)

1.3 Specifications

Column oven

- Maximum column length
  - Stainless steel column* (5mm O.D., 4mm I.D.): 6m × 2
  - Glass column (5mm O.D., 2.6mm I.D.): 5.4m × 2
  - Capillary column** (stainless steel, glass, silica): 90m × 1
- Temperature range: 0°C ~ +399°C
- Temperature control accuracy: ±0.1°C

Temperature control unit for the detector oven and sample injection ports

- Temperature range: 0 ~ +400°C (10°C intervals)
- Temperature control accuracy: ±0.1°C

Overheat protection

- Column oven: Contained in the temperature controller. When the oven temperature is more than 50°C higher than the set value (i.e., a malfunction has occurred) the heater circuit will shut off.
- Sample injection ports (TCD cell): When the temperature exceed 420°C, the heater circuit will shut off.

Sample injection port

The on-column injection is standard.
The outside diameter of the packed columns should be 5mm.
Stainless steel adaptors are available for metal columns of other type of Shimadzu GC.

Flow control system

- Carrier gas: Pressure regulator 2
  Pressure gauge (0 ~ 6kg/cm²) 2
- Detector: Four rhenium tungsten filaments (100Ω at room temperature).
  Differential type with a semi-diffusion flow line.
- Maximum temperature: 400°C
- Power source for bridge current: Constant-current control system.
- Bridge current: OFF, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200mA. Stepwise adjustment.
- Attenuation: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024 and ∞.
- Polarity switch: When helium is used as the carrier gas, the components of a sample injected into the column 1 will be recorded as positive peaks.
- Zero point adjustment: Coarse and fine.
- Filament protection circuit provided.
- Maximum sensitivity: About 7000mV·mℓ/mg (depends on the compounds and the operational conditions.

*S.S. columns for GC-4C and GC-6A can be attached using special adaptor.

**Optional accessory is necessary.

Other specifications

- Dimensions: 440mm(W) X 570mm(H) X 410mm(D)
- Weight: 34.5kg (76 lbs)
- Maximum power consumption: 1500VA
- Power requirements*: AC 100V 50/60Hz single phase,
  AC 115V 60Hz single phase or
  AC 220V 50Hz single phase

* Indicated on the cable.